

**Amendments to the Claims:**

This listing of the claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1-21 (canceled)

22. (previously presented) An isolated polynucleotide that hybridizes to the 21q22.3 region of human chromosome 21 under hybridization wash conditions of 0.1XSSC to 2XSSC, 0.1% SDS at 55°C-65°C and that encodes a polypeptide comprising a sequence of amino acid residues that is at least 90% identical to an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence as shown in SEQ ID NO:2 from amino acid number 26 (Tyr), to amino acid number 235 (Ser); and

(b) the amino acid sequence as shown in SEQ ID NO:2 from amino acid number 1 (Met), to amino acid number 235 (Ser); and

(c) polynucleotide molecules complementary to (a) or (b).

23. (previously presented) An isolated polynucleotide according to claim 22, wherein the polynucleotide encodes a polypeptide comprising a sequence of amino acid residues that is at least 95% identical to an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence as shown in SEQ ID NO:2 from amino acid number 26 (Tyr), to amino acid number 235 (Ser); and

(b) the amino acid sequence as shown in SEQ ID NO:2 from amino acid number 1 (Met), to amino acid number 235 (Ser); and

(c) polynucleotide molecules complementary to (a) or (b).

24. (previously presented) An isolated polynucleotide according to claim 22, wherein the polynucleotide encodes a polypeptide comprising a sequence of amino acid residues comprising an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence as shown in SEQ ID NO:2 from amino acid number 26 (Tyr), to amino acid number 235 (Ser); and

(b) the amino acid sequence as shown in SEQ ID NO:2 from amino acid number 1 (Met), to amino acid number 235 (Ser); and

(c) polynucleotide molecules complementary to (a) or (b).

25. (previously presented) An isolated polynucleotide according to claim 24, wherein the polynucleotide encodes a polypeptide that consists of a sequence of amino acid residues as shown in SEQ ID NO:2 from amino acid number 26 (Tyr) to amino acid number 235 (Ser); or amino acid 1 (Met), to amino acid number 235 (Ser).

26. (previously presented) The isolated polynucleotide molecule of claim 22, wherein the polynucleotide encodes a polypeptide that further contains motifs 1, 2, 3, 4 and 5 spaced apart from N-terminus to C-terminus in a configuration M1-{25-26}-M2-{15}-M3-{11}-M4-{34-36}-M5,

wherein M1 is "motif 1," a sequence of amino acids as shown in amino acids 127 to 129 of SEQ ID NO:2,

M2 is "motif 2," a sequence of amino acids as shown in amino acids 156 to 158 of SEQ ID NO:2,

M3 is "motif 3," a sequence of amino acids as shown in amino acids 174 to 176 of SEQ ID NO:2,

M4 is "motif 4," a sequence of amino acids as shown in amino acids 188 to 190 of SEQ ID NO:2, and

M5 is "motif 5," a sequence of amino acids as shown in amino acids 227 to 229 of SEQ ID NO:2), and

{#} denotes the number of amino acids between the motifs.

27. (previously presented) A vector comprising the following operably linked elements:

a transcription promoter;

a DNA segment that hybridizes to the 21q22.3 region of human chromosome 21 under hybridization wash conditions of 0.1XSSC to 2XSSC, 0.1% SDS at 55°C-65°C and that encodes a polypeptide comprising an amino acid sequence as shown in SEQ ID NO:2 from amino acid number 26 (Tyr) to amino acid number 235 (Ser); or 1 (Met) to amino acid number 235 (Ser); and

a transcription terminator,

wherein the promoter is operably linked to the DNA segment, and the DNA segment is operably linked to the transcription terminator.

28. (previously presented) A vector according to claim 27, wherein the vector is an expression vector.

29. (previously presented) A cell into which has been introduced a vector according to claim 27.

30. (previously presented) An expression vector comprising the following operably linked elements:

a transcription promoter;

a DNA segment comprising a polynucleotide selected from the group consisting of:

(a) polynucleotide molecules comprising a nucleotide sequence as shown in SEQ ID NO:1 from nucleotide 194 to nucleotide 823;

(b) polynucleotide molecules comprising a nucleotide sequence as shown in SEQ ID NO:1 from nucleotide 119 to nucleotide 823;

(c) polynucleotide molecules comprising a nucleotide sequence as shown in SEQ ID NO:8 from nucleotide 1 to nucleotide 705;

(d) polynucleotide molecules comprising a nucleotide sequence as shown in SEQ ID NO:8 from nucleotide 76 to nucleotide 705; and

(e) polynucleotide molecules complementary to (a), (b), (c) or (d); and a transcription terminator,

wherein the promoter is operably linked to the DNA segment, and the DNA segment is operably linked to the transcription terminator.

31. (previously presented) A cell into which has been introduced a vector according to claim 30.

32. (withdrawn) An isolated polypeptide comprising a sequence of amino acid residues selected from the group consisting of:

(a) polypeptide molecules comprising an amino acid sequence as shown in SEQ ID NO:2 from amino acid number 26 (Tyr) to amino acid number 235 (Ser) of SEQ ID NO:2; and

(b) polypeptide molecules comprising an amino acid sequence as shown in SEQ ID NO:2 from amino acid residue number 1 (Met) to amino acid residue number 235 (Ser).

33. (withdrawn) An isolated polypeptide according to claim 32, wherein the polypeptide consists of a sequence of amino acid residues selected from the group consisting of:

(a) polypeptide molecules comprising an amino acid sequence as shown in SEQ ID NO:2 from amino acid number 26 (Tyr) to amino acid number 235 (Ser) of SEQ ID NO:2; and

(b) polypeptide molecules comprising an amino acid sequence as shown in SEQ ID NO:2 from amino acid residue number 1 (Met) to amino acid residue number 235 (Ser).

34. (previously presented) A method of producing a polypeptide comprising:

culturing a cell according to claim 31; and  
isolating the polypeptide produced by the cell.

35. (withdrawn) A method of producing an antibody to a polypeptide comprising:

inoculating an animal with a polypeptide selected from the group consisting of:

(a) a polypeptide consisting of 9 to 210 amino acids, wherein the polypeptide comprises a contiguous sequence of amino acids in SEQ ID NO:2 from amino acid number 26 (Tyr) to amino acid number 235 (Ser);

(b) a polypeptide consisting of the amino acid sequence of SEQ ID NO:2 from amino acid number 26 (Tyr) to amino acid number 235 (Ser);

(c) a polypeptide consisting of the amino acid sequence of SEQ ID NO:2 from amino acid number 59 (Arg) to amino acid number 133 (Asp);

(d) a polypeptide consisting of the amino acid sequence of SEQ ID NO:2 from amino acid number 135 (Ser) to amino acid number 212 (Ala);

(e) a polypeptide consisting of the amino acid sequence of SEQ ID NO:2 from amino acid 215 (Asn) to amino acid number 231 (Pro); and

wherein the polypeptide elicits an immune response in the animal to produce the antibody; and

isolating the antibody from the animal.

36. (withdrawn) An antibody produced by the method of claim 35, which specifically binds to a polypeptide of SEQ ID NO:2.

37. (withdrawn) An antibody that specifically binds to a polypeptide of claim 32.

38. (withdrawn) A method of detecting, in a test sample, the presence of an antagonist of z219a protein activity, comprising:

transfecting a z219a-responsive cell, with a reporter gene construct that is responsive to a z219a-stimulated cellular pathway; and

producing a z219a polypeptide by the method of claim 34; and

adding the z219a polypeptide to the cell, in the presence and absence of a test sample; and

comparing levels of response to the z219a polypeptide, in the presence and absence of the test sample, by a biological or biochemical assay; and

determining from the comparison, the presence of the antagonist of z219a activity in the test sample.

39. (withdrawn) A method of detecting, in a test sample, the presence of an agonist of z219a protein activity, comprising:

transfecting a z219a-responsive cell, with a reporter gene construct that is responsive to a z219a-stimulated cellular pathway; and

adding a test sample; and

comparing levels of response in the presence and absence of the test sample, by a biological or biochemical assay; and

determining from the comparison, the presence of the agonist of z219a activity in the test sample.

40. (withdrawn) A method for detecting a chromosome 21 trisomy or partial trisomy in a patient sample, comprising:

(i) obtaining a genetic sample from a patient;

(ii) hybridizing the genetic sample with a polynucleotide comprising a nucleotide sequence selected from the group consisting of:

(a) polynucleotide molecules comprising a nucleotide sequence as shown in SEQ ID NO:1 from nucleotide 194 to nucleotide 823;

(b) polynucleotide molecules comprising a nucleotide sequence as shown in SEQ ID NO:1 from nucleotide 119 to nucleotide 823;

(c) polynucleotide molecules comprising a nucleotide sequence as shown in SEQ ID NO:8 from nucleotide 1 to nucleotide 705;

(d) polynucleotide molecules comprising a nucleotide sequence as shown in SEQ ID NO:8 from nucleotide 76 to nucleotide 705; and

(c) polynucleotide molecules complementary to (a), (b), (c) or (d);

and,

wherein hybridization conditions comprise 0.1XSSC to 2XSSC, 0.1% SDS at 55°C-65°C, wherein the genetic sample and the polynucleotide will hybridize and hence create a hybridization product,

(iii) visualizing the hybridization product; and

(iv) comparing the hybridization product to a control reaction product,

wherein the control reaction product is produced from a control genetic sample from a control patient without chromosome 21 trisomy or partial trisomy using the method of (i)-(iv), and

wherein a difference between said hybridization product and said control reaction product is indicative of chromosome 21 trisomy or partial trisomy in the patient.